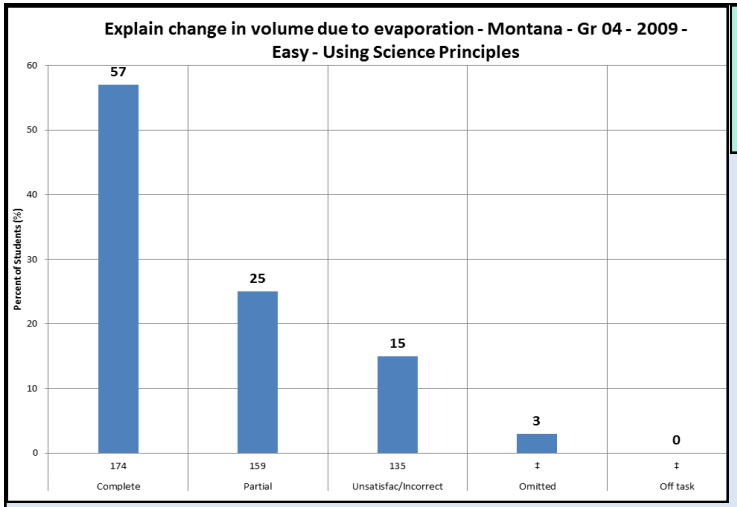
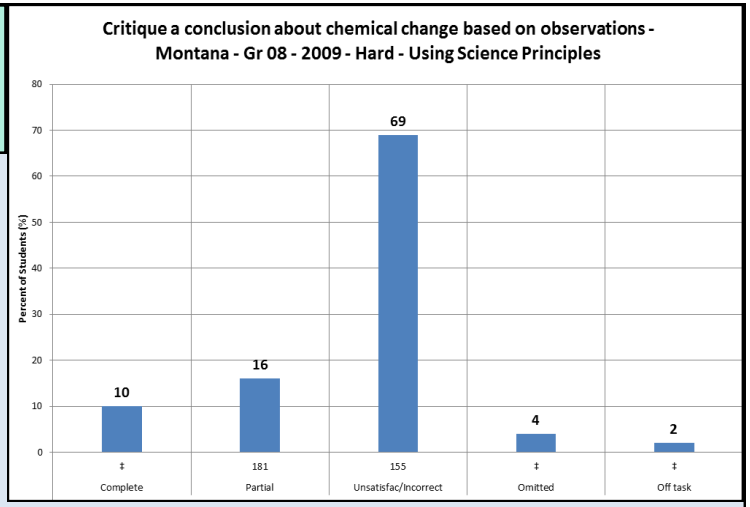
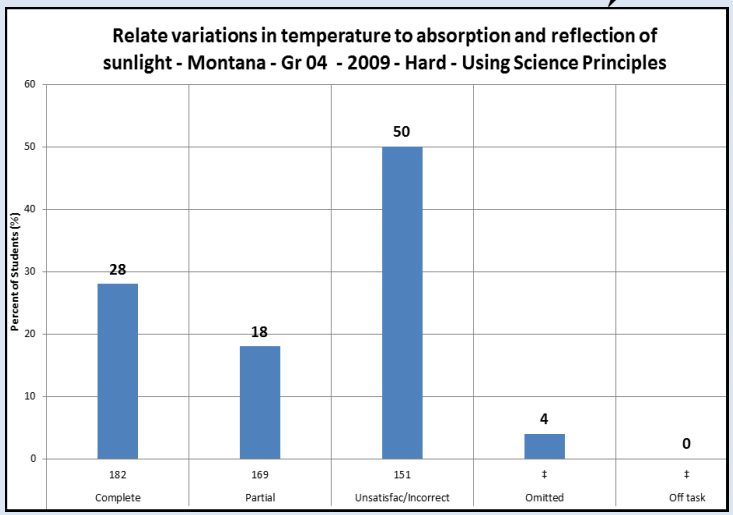
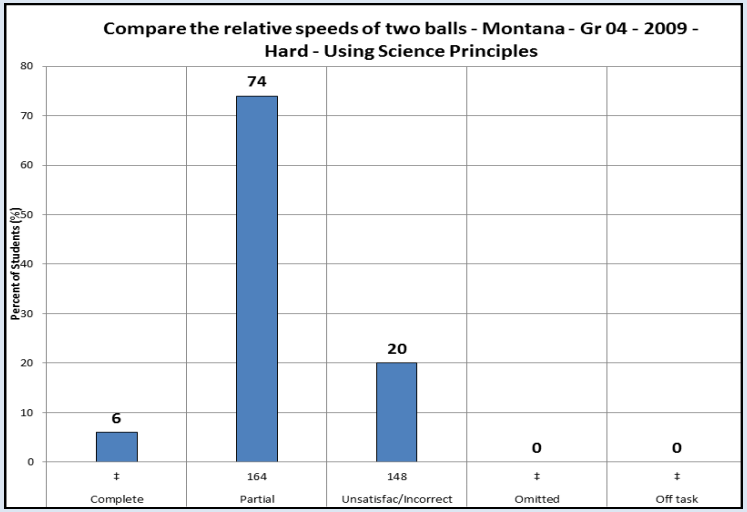
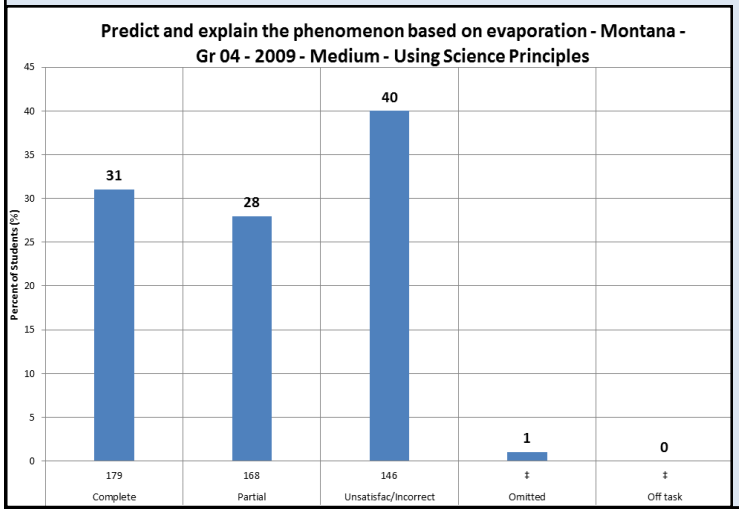
Physical Science











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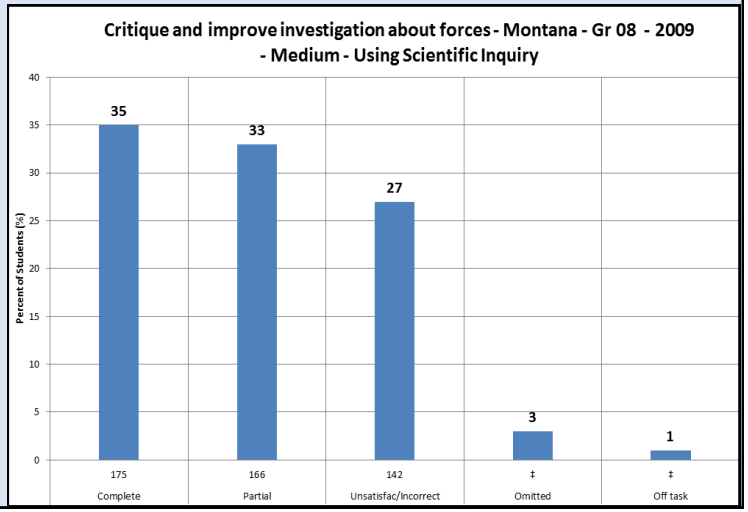


Physical Science

9. A class observes two demonstrations: water changing into steam and a piece of wood burning and producing smoke. A student concludes that both demonstrations must be examples of a chemical change because a gas is produced in each.

   Is the student's conclusion accurate? Explain your answer, referring to both demonstrations.

No, Burning wood is a chemical change because it creates something new. Water changing into steam is physical change, because it can be changed back into water.

Score & Description

Complete

Student response indicates that the student's conclusion is not accurate and correctly explains why water changing into steam is not a chemical change and why wood burning and producing smoke is a chemical change. Response demonstrates understanding that water changing to steam is a physical change, is a reversible process, or does not produce a new substance. Response demonstrates understanding that wood burning produces new substances or is not a reversible process.

No, because when steam from water evaporates it doesnt change the chemicals, the particles have more energy.

Partial

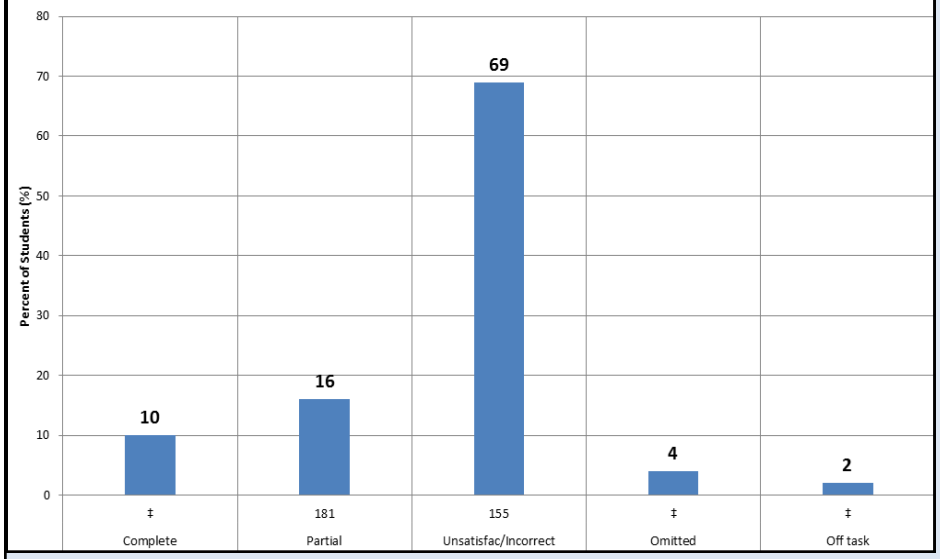
Student response indicates that the student's conclusion is not accurate and correctly addresses why water changing to steam is not a chemical change or why wood burning and producing smoke is a chemical change.
OR
Student response indicates that the student's conclusion is accurate or fails to address the accuracy of the conclusion, and correctly addresses why water changing to steam is not a chemical change or why wood burning and producing smoke is a chemical change, supporting that the student's conclusion is not accurate.

yes the conclusion is accurate because as water boils and turns to steam it changes from liquid to gas and as the wood burns it lets off gases also known as smoke.

Unsatisfactory/Incorrect

Student response is inadequate or incorrect.

Critique a conclusion about chemical change based on observations - Montana - Gr 08 - 2009 - Hard - Using Science Principles



NOTE: These results are for public and nonpublic school students. Percentages may not add to 100 due to rounding. Off task applies to responses that do not address the question presented, are illegible, or cannot otherwise be scored.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), Science Assessment.

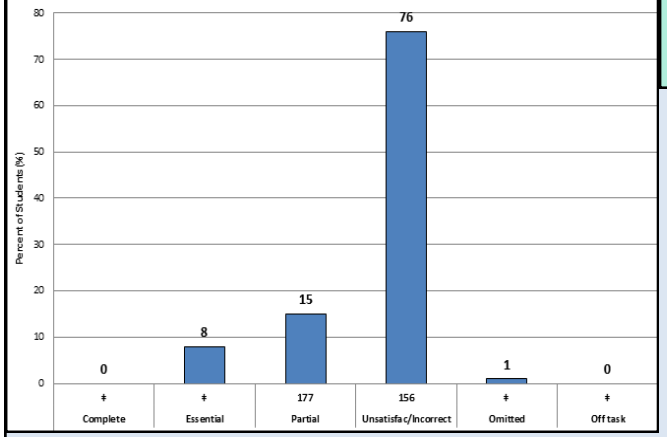
Proficient = 170

8th grade students should be able to demonstrate relationships among closely related science principles. They should be able to identify evidence of chemical changes; explain and predict motions of objects using position-time graphs; explain metabolism, growth, and reproduction in cells, organisms, and ecosystems; use observations of the Sun, Earth, and Moon to explain visible motions in the sky; and predict surface and groundwater movements in different regions of the world. They should be able to explain and predict observations of phenomena at multiple scales, from microscopic to macroscopic and local to global, and to suggest examples of observations that illustrate a science principle. They should be able to use evidence from investigations in arguments that accept, revise, or reject scientific models. They should be able to use scientific criteria to propose and critique alternative individual and local community responses to design problems.

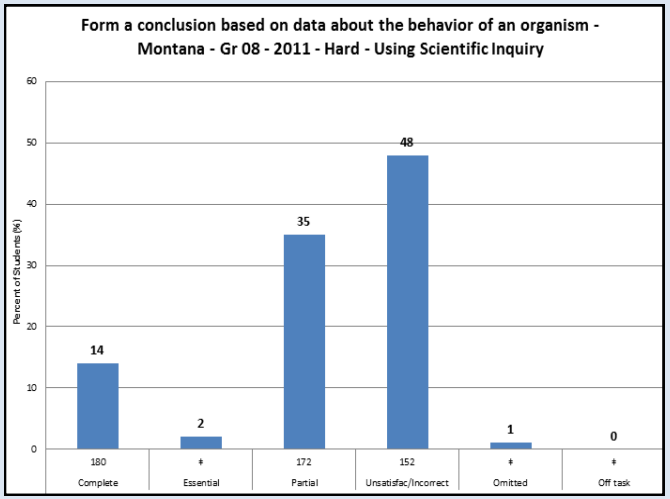
Information obtained from: http://nces.ed.gov/nationsreportcard/itmrlsx/detail.aspx?subject=science

Life Science

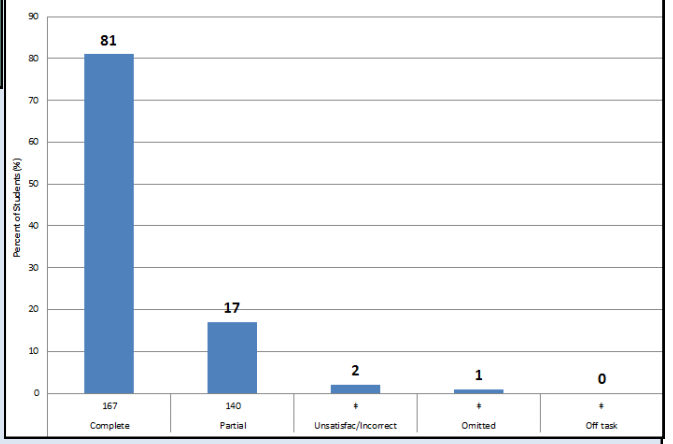
Choose and critique setups for investigating the growth of plants - Montana - Gr 04 - 2009 - Hard - Using Scientific Inquiry



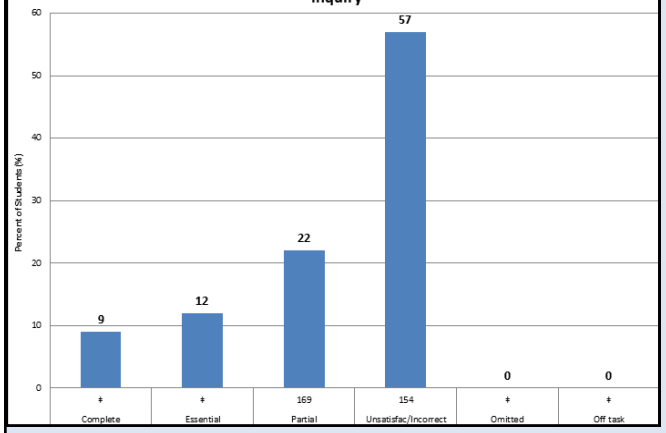
Form a conclusion based on data about the behavior of an organism - Montana - Gr 08 - 2011 - Hard - Using Scientific Inquiry



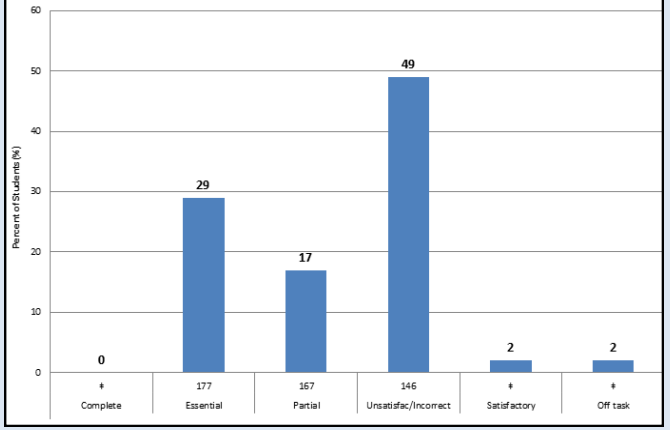
Identify relationships in a food web - composite - Montana - Gr 08 - 2009 - Easy - Identifying Science Principles



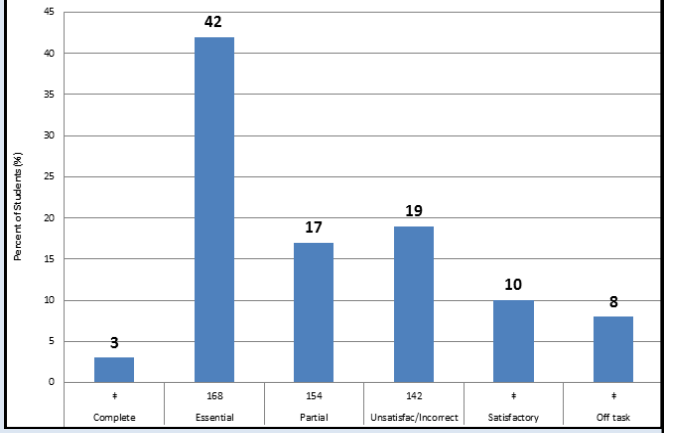
Select and explain graph types and draw graphs from data that compare insect behaviors - Montana - Gr 08 - 2011 - Hard - Using Scientific Inquiry



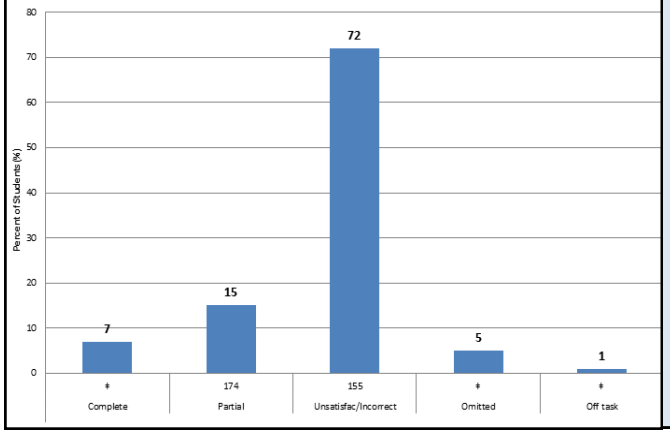
Design investigation to compare types of bird food - Montana - Gr 04 - 2009 - Hard - Using Scientific Inquiry



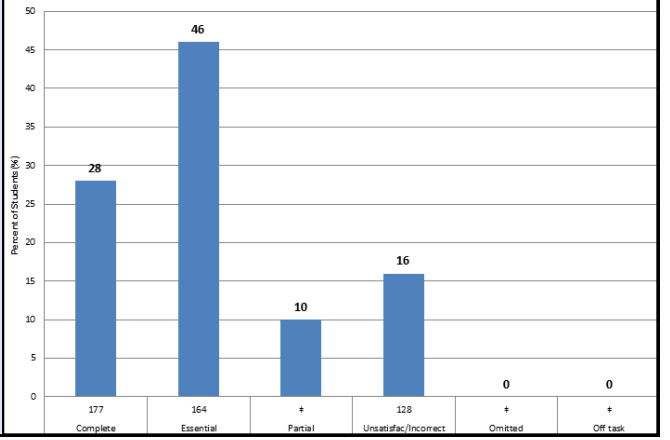
Design an experiment to investigate inheritance in plants - Montana - Gr 08 - 2009 - Hard - Using Scientific Inquiry



Explain differences between related individuals - Montana - Gr 04 - 2009 - Hard - Using Science Principles



Predict changes in populations based on the food web - composite - Montana - Gr 08 - 2009 - Medium - Using Science Principles



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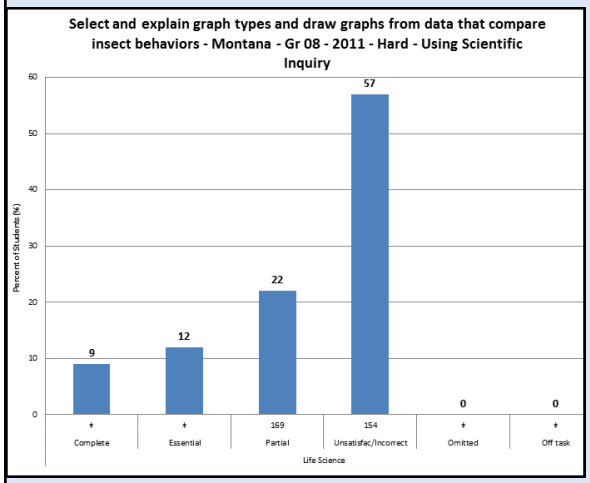
Life Science

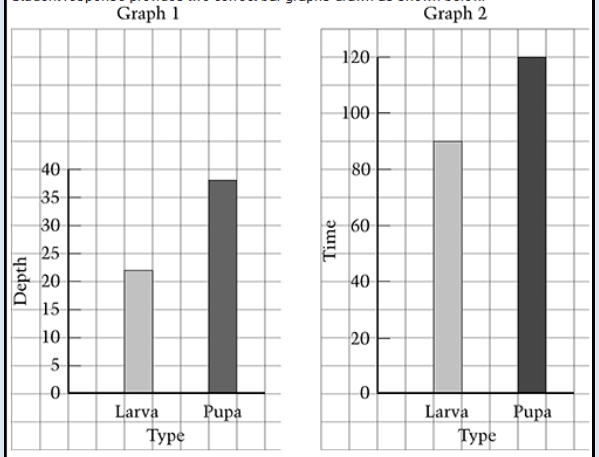


"Complete" examples

Part B:

Complete

Student response provides two correct bar graphs drawn as shown below.



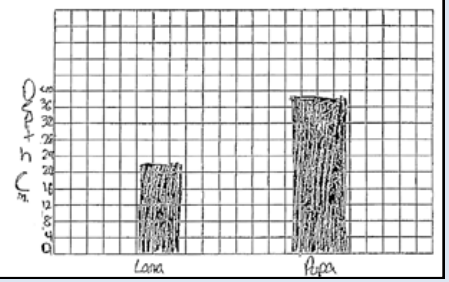
Partial

Student response is partially correct.

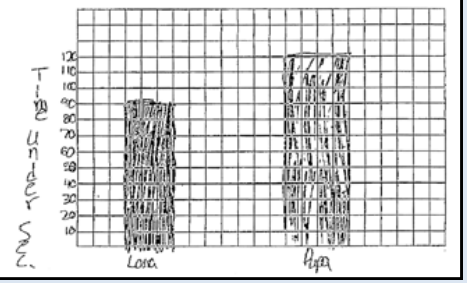
Unsatisfactory/Incorrect

Student response is inadequate or incorrect.

Graph 1



Graph 2



Parts A and B: Complete - Student Response

11. You will use the data in the table to create two graphs to compare the behaviors of the larva and the pupa.
Which graph format would be best to use for both graphs?

- (•) Bar graph
- ( ) Line graph

Explain why you think this graph format would be best for the information in this table.

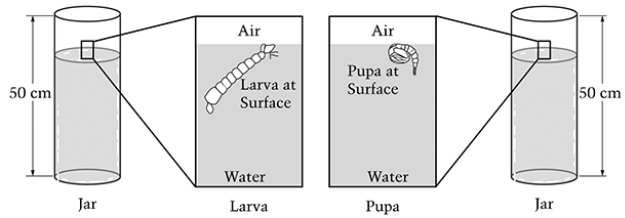
The bar graph would be better because you are measuring & comparing 2 different things.

Questions 10 - 13 refer to the following investigation.

Some students were studying the life cycle of mosquitoes. They learned that mosquito larvae and pupae spend part of their time at the surface of water.

The students wanted to find out how a larva and pupa behaved when the jars they were in were disturbed. They put one larva and one pupa in identical tall jars of water at 20°C as shown below.

JARS WITH LARVA AND PUPA



The students tapped on the jars when the larva and pupa were at the surface of the water. The larva and pupa dove down into the jars, and then slowly came to the surface.

The students measured the depth each larva and pupa reached and the amount of time each stayed underwater. The students repeated this step five times and calculated the average of each of their measurements.

Their results are summarized in the table below.

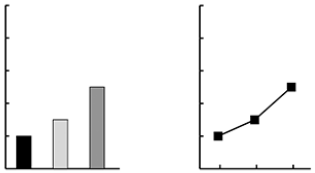
DATA TABLE

	Larva		Pupa	
Number of Trials	Average Depth Reached (centimeters)	Average Length of Time Underwater (seconds)	Average Depth Reached (centimeters)	Average Length of Time Underwater (seconds)
5	22	90	38	120

11. You will use the data in the table to create two graphs to compare the behaviors of the larva and the pupa.

Which graph format would be best to use for both graphs?

SAMPLE BAR GRAPH SAMPLE LINE GRAPH



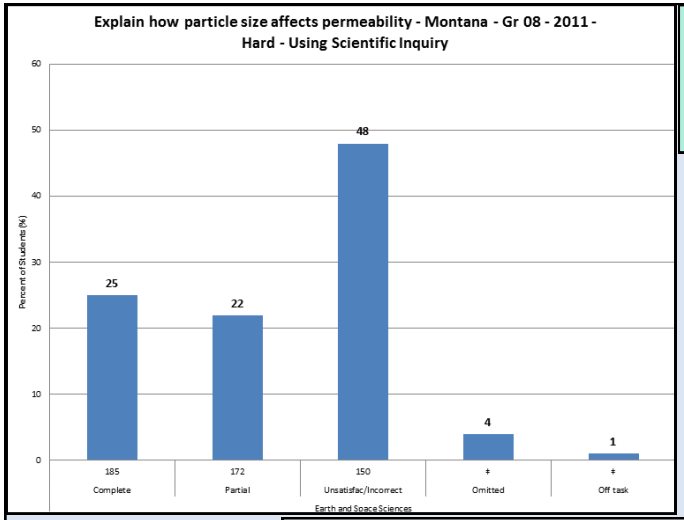
A. Bar graph
B. Line graph

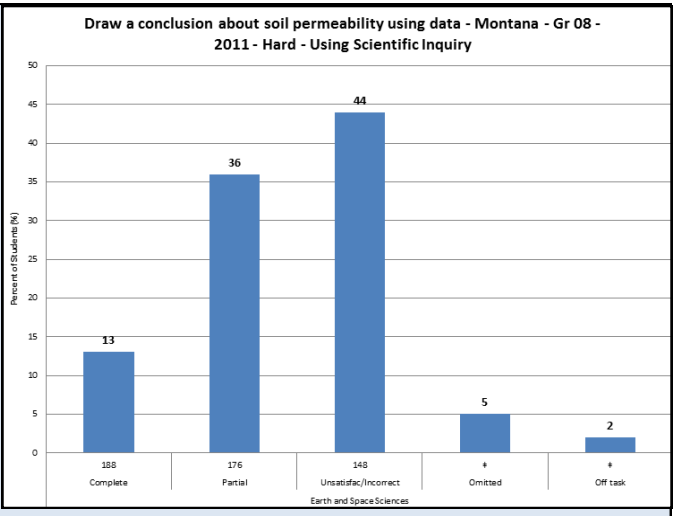
Explain why you think this graph format would be best for the information in this table.

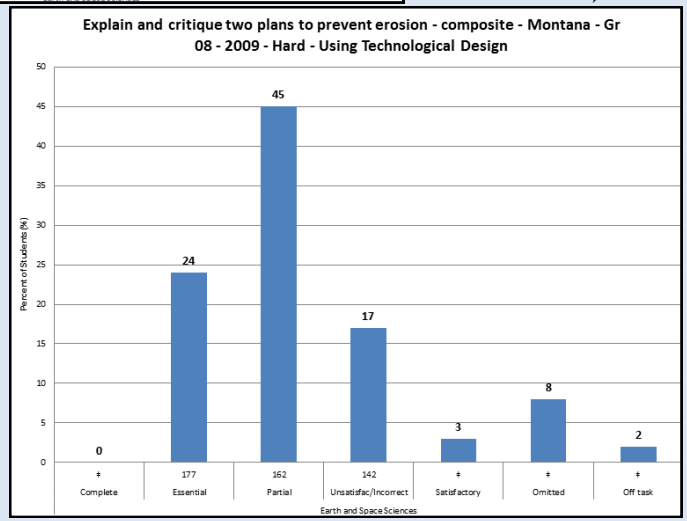
In the space provided below, draw each graph using the format you chose. Use the data from the table. Be sure to label all parts of your graph.

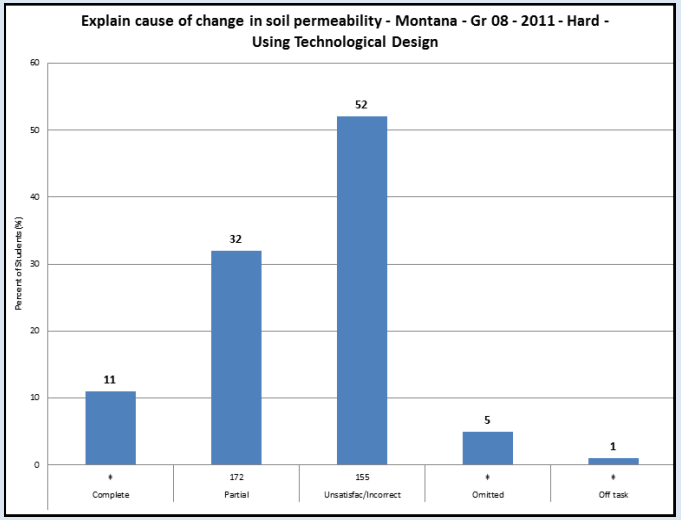
Information obtained from: http://nces.ed.gov/nationsreportcard/itmrlsx/detail.aspx?subject=science

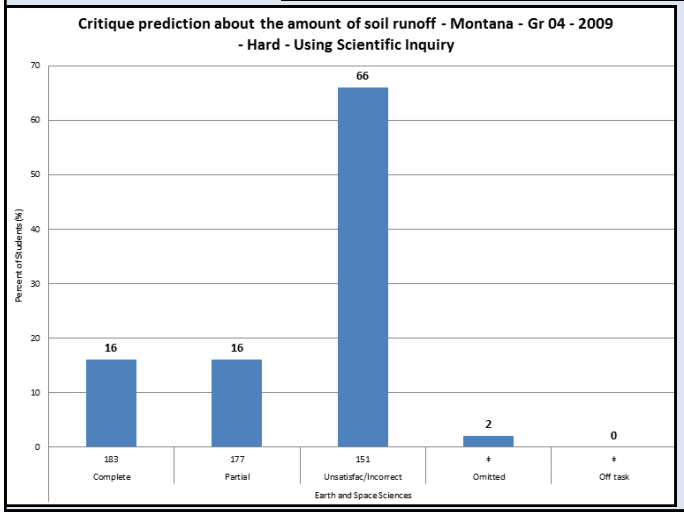
Earth and Space Science











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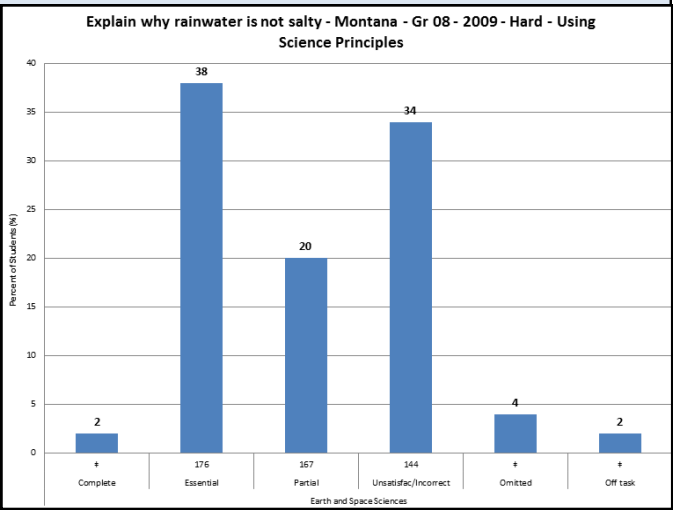

Earth and Space Science

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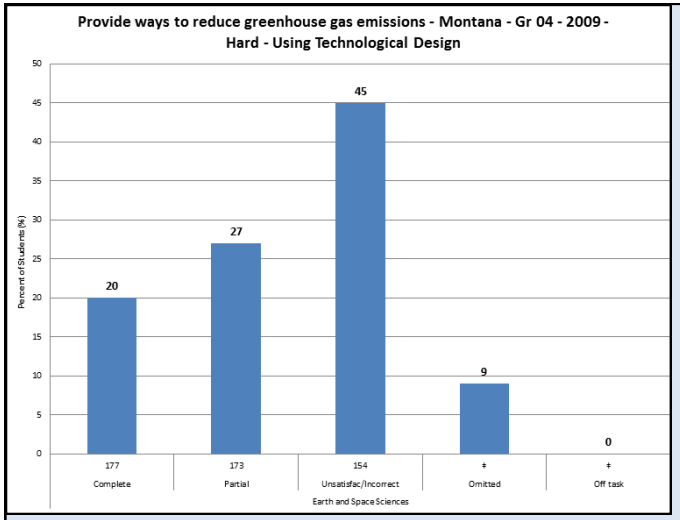
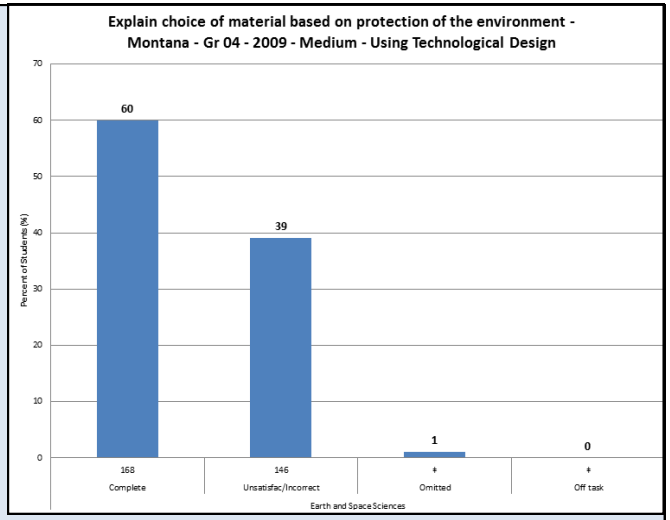
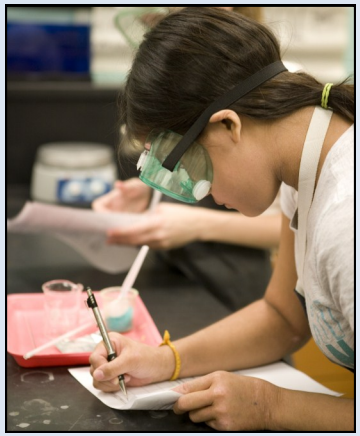
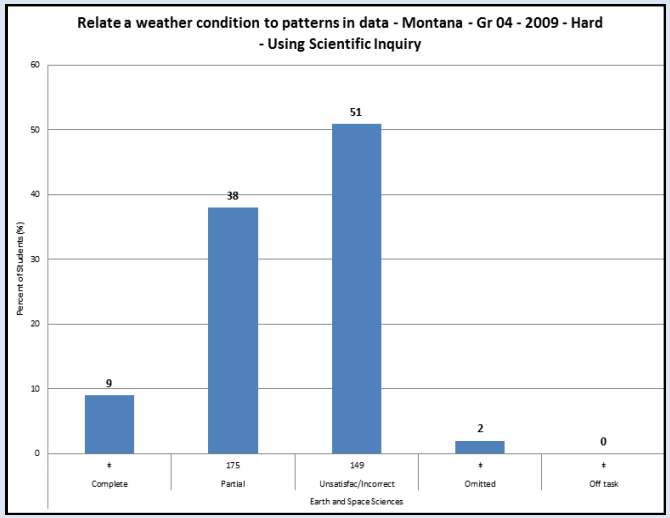
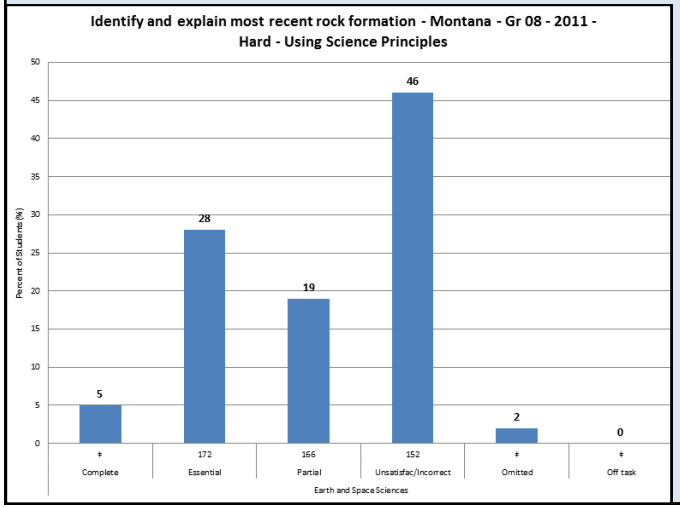
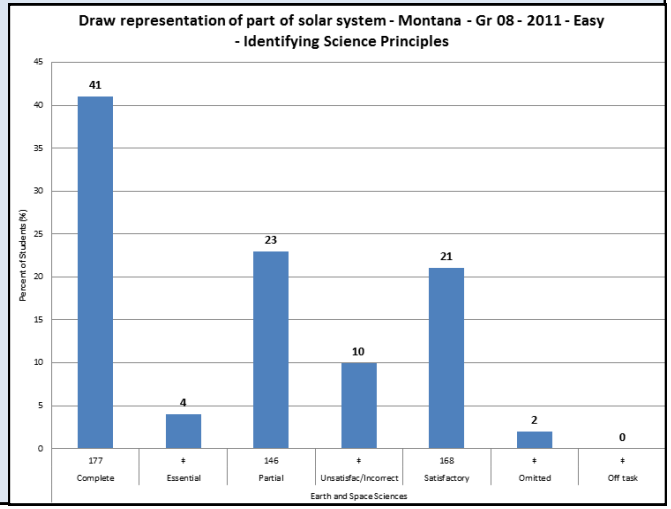












Earth and Space Science

16. Some homes were built near the shoreline of the ocean. Sand dunes lie between the homes and the water. Each year a portion of the sand dunes is eroded by the ocean. To prevent erosion, some citizens suggest planting grasses on the sand dunes, and others suggest building a seawall, a solid barrier along the shoreline.

Explain how each plan would prevent erosion of the dunes.

Explain how each plan would prevent erosion of the dunes.

The grass roots will keep the sand in place as water goes over it and the sea wall will reduce the amount of water going over the sand.

Give an environmental advantage and disadvantage of each plan.

"Complete" examples

Environmental advantage of planting grasses:

The air gets cleaner

Environmental disadvantage of planting grasses:

Some animals environments do not include grass

Environmental advantage of building a seawall:

animal homes in the dunes will not be destroyed

Environmental disadvantage of building a seawall:

animals needing to go in and out of the ocean now have more trouble

Score & Description:

This item was scored in 3 parts.
Part A: Explain each plan.
Part B: Advantage and disadvantage of grasses
Part C: Advantage and disadvantage of seawall

Part A:

Complete

Student response correctly explains how planting grasses and building a seawall would prevent erosion.

Partial

Student response correctly explains either how planting grasses or building a seawall would prevent erosion.

Unsatisfactory/Incorrect

Student response is inadequate or incorrect.

Part B:

Complete

Student response correctly provides a plausible advantage and disadvantage of planting grasses.

Partial

Student response correctly provides a plausible advantage or a plausible disadvantage of planting grasses.

Unsatisfactory/Incorrect

Student response is inadequate or incorrect.

Part C:

Complete

Student response correctly provides a plausible advantage and disadvantage of building a seawall.

Partial

Student response correctly provides a plausible advantage or a plausible disadvantage of building a seawall.

Unsatisfactory/Incorrect

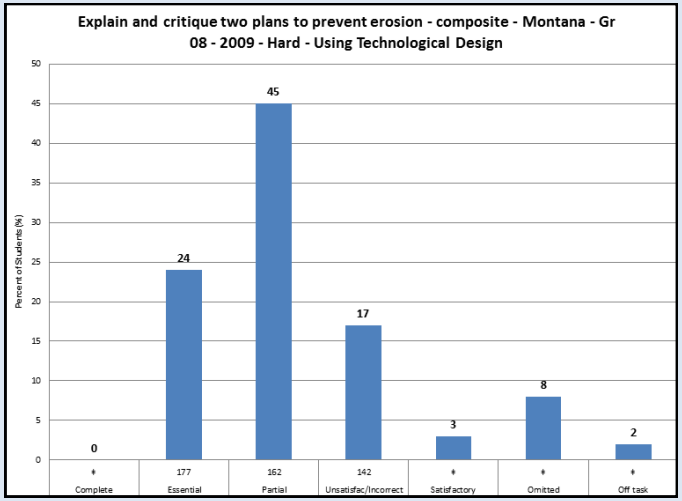
Student response is inadequate or incorrect.

Environmental advantage of planting grasses:

Environmental disadvantage of planting grasses:

Environmental advantage of building a seawall:

Environmental disadvantage of building a seawall:



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